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NAS CECIL FIELD
5090.3a

SAMPLING AND ANALYSIS REPORT TRANSPORTATION AND FUEL MANAGEMENT
COMPOUND (INCLUDING BUILDINGS 49, 80, 80C, 178, 180, 384, AND FACILITY 584) BASE
REALIGNMENT AND CLOSURE ZONE C DEVELOPED NONINDUSTRIAL AREA GROUP VIII
NAS CECIL FIELD FL
6/1/1998
HARDING LAWSON ASSOCIATES

SAMPLING AND ANALYSIS REPORT

**TRANSPORTATION AND FUEL MANAGEMENT COMPOUND
(INCLUDING BUILDINGS 49, 80, 80C, 178, 180, 384, AND
FACILITY 584)**

BASE REALIGNMENT AND CLOSURE

**ZONE C, DEVELOPED NONINDUSTRIAL AREA
GROUP VIII**

**NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

Unit Identification Code: N60200

Contract No.: N62467-89-D-0317/090

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June 1998

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Base Realignment and Closure
Zone C, Developed Nonindustrial Area, Group VIII
Naval Air Station Cecil Field, Jacksonville, Florida

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc
BCEP	BRAC Cleanup Plan
BCT	Base Realignment and Closure (BRAC) cleanup team
BRAC	Base Realignment and Closure
CRDL	contract-required detection limit
EBS	environmental baseline survey
ELCR	excess lifetime cancer risk
FDEP	Florida Department of Environmental Protection
FOSL	Finding of Suitability to Lease
HI	hazard index
HLA	Harding Lawson Associates
HQ	hazard quotient
MCL	maximum contaminant level
$\mu\text{g}/\ell$	micrograms per liter
NAS	Naval Air Station
PCB	polychlorinated biphenyl
ppm	parts per million
POP	project operations plan
PRE	Preliminary Risk Evaluation
SAO	sampling and analysis outline
TFM	Transportation and Fuel Management
TMP	Tank Management Plan
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank

1.0 INTRODUCTION

Harding Lawson Associates (HLA) (formerly ABB Environmental Services, Inc. [ABB-ES]), under contract to the Southern Division, Naval Facilities Engineering Command, has completed the Phase II Sampling and Analysis program for the Transportation and Fuel Management (TFM) Compound, which encompasses Buildings 49, 80, 80C, 178, 180, 384, 584, and associated fuel and waste oil tanks (Figure 1), at Naval Air Station (NAS) Cecil Field. This report summarizes the related field operations, results, conclusions, and recommendations of the Phase II investigation.

The TFM Compound is located on the north side of 9th Street, between B Avenue and D Avenue. The TFM facilities are identified in the Environmental Baseline Survey (EBS) Report (ABB-ES, 1994a), as follows:

49	Transportation and Fuel Management Administration Building
80	Automotive Maintenance and Repair Shop
80C	Battery Shop
178	Refuel Vehicle Maintenance Shop
180	Old Filling Station and New Filling Station
384	Automotive Shop
584	Transformer Pad

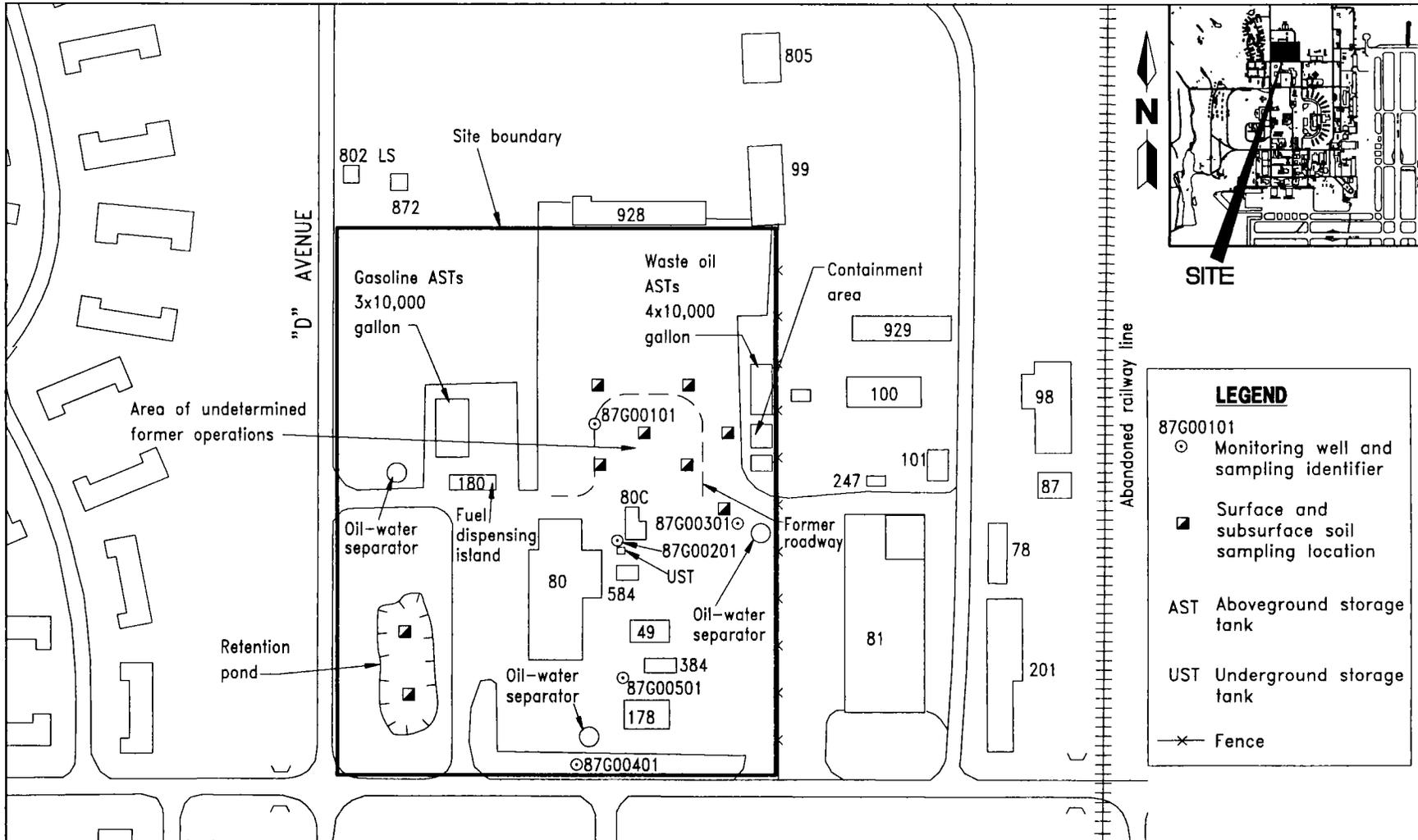
A Sampling and Analysis Outline (SAO) was prepared by ABB-ES (ABB-ES, 1997a) and approved by the Base Realignment and Closure (BRAC) cleanup team (BCT). The SAO outlines the rationale and strategy for assessment of environmental concerns at the TFM Compound. Environmental concerns that specifically relate to the potential for contamination of soil or groundwater by petroleum products are evaluated separately, as outlined in the Tank Management Plan (TMP) (ABB-ES, 1997b).

2.0 PHASE II INVESTIGATION

This Phase II investigation included the collection and screening of nine surface and subsurface soil samples, installation of five shallow groundwater monitoring wells, and collection and analysis of five groundwater samples. Field activities were undertaken in general conformance with the Project Operations Plan (ABB-ES, 1994b). Although investigations, analyses, and evaluations conducted as part of the TMP may be referred to herein, full details are not discussed in this report.

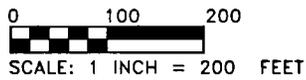
No sampling or analysis was conducted in association with Facility 584. Records indicate that the electrical equipment mounted to the concrete slab referred to as Facility 584, contains dielectric fluid with less than 10 parts per million (ppm) polychlorinated biphenyl (PCB) (NAS Cecil Field Oil Filled Electrical Distribution Inventory, 1995). Furthermore, no evidence of leakage of dielectric fluid was observed during site walkovers.

2.1 Surface and Subsurface Soil Surface and subsurface soil samples were collected at nine locations and screened for the presence of organic vapors. Samples were collected from a paved area to the north and east of Buildings 80 and 80C, and from a stormwater retention area west of Building 80. The SAO indicated that additional samples would be collected and submitted for laboratory



LEGEND

- 87G00101
 Monitoring well and sampling identifier
- Surface and subsurface soil sampling location
- AST Aboveground storage tank
- UST Underground storage tank
- Fence



**FIGURE 1
 TRANSPORTATION AND FUEL
 MANAGEMENT COMPOUND
 SAMPLE LOCATION PLAN**



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analysis if organic vapors were detected at concentrations in excess of 50 ppm. However, no organic vapors were detected in excess of this concentration during field screening operations. Therefore, no soil samples were submitted for laboratory analysis.

2.2 Groundwater Shallow groundwater monitoring wells were installed adjacent to oil-water separators located east and south of Building 80. Shallow groundwater monitoring wells were also installed downgradient of Buildings 80C and 384, and in an open paved area approximately 200 feet north of Building 80. A general site plan indicating the locations of soil samples and monitoring wells is presented on Figure 1.

The monitoring wells were installed to depths of 15 to 16 feet below land surface. Monitoring well boring logs are included in Appendix A. One groundwater sample was collected from each well and analyzed for the full Contract Laboratory Program suite of target compound list organics and target analyte list inorganics.

2.2.1 Other Investigations Additional investigations have been conducted at the TFM Compound in conjunction with the TMP at NAS Cecil Field. A contamination assessment was conducted at the Building 80 underground storage tanks (USTs) in 1992 (ABB-ES, 1992). Confirmatory sampling at the other TFM Compound USTs, aboveground storage tanks, and oil-water separators was completed in 1997.

Excessively contaminated soil was detected at an underground heating oil storage tank east of Building 80, and at oil-water separators located east of Building 80, and west of Building 180. Shallow groundwater monitoring wells were installed at these facilities as part of the TMP. Samples collected from these monitoring wells indicate that groundwater in the vicinity of the heating oil UST has been impacted by petroleum contaminants. Details of these sampling programs are presented in the Confirmatory Sampling Report (ABB-ES, 1997c). Investigations are currently underway to assess the extent of petroleum contamination at Building 80.

3.0 PRELIMINARY RISK EVALUATION

A preliminary risk evaluation (PRE) was conducted to assess potential risks to human and ecological receptors posed by contaminants in groundwater. Primary exposure pathways were evaluated to determine which pathways potentially contribute to human health and ecological risks. The evaluation was conducted in general conformance with methodology provided in the U.S. Environmental Protection Agency (USEPA) Region IV memorandum entitled Amended Guidance on Preliminary Risk Evaluations (PREs) for the Purpose of Reaching a Finding of Suitability to Lease (FOSL) (USEPA, 1994), USEPA Region IV bulletins on ecological risk assessment (USEPA, 1995), and minutes of meetings with the USEPA and the Florida Department of Environmental Protection (FDEP) concerning PREs (ABB-ES, 1995). Site background information and rationale for sample collection and analysis are detailed in the EBS Report (ABB-ES, 1994b) and the SAO (ABB-ES, 1997a). Environmental concerns currently being evaluated under the TMP have not been included in this evaluation.

3.1 PUBLIC HEALTH PRE. All detected analytes were compared to readily available risk-based screening values to assess the likelihood of adverse human health effects associated with potential exposure to groundwater. Risk-based screening values were obtained from USEPA Region III Risk-Based Concentrations (RBCs), (USEPA, 1996), and FDEP Groundwater Guidance Concentrations (FDEP, 1994). Most screening values published in the references listed above are based on toxicity constants and standard human exposure scenarios, and correspond to fixed levels of risk. The designated level of risk for noncarcinogenic chemicals is based on a hazard quotient (HQ) of 1. The level of risk for carcinogenic chemicals is based on an excess lifetime cancer risk (ELCR) of 1×10^{-6} . Cancer and noncancer risks associated with industrial and residential land use are estimated by dividing the maximum detected analyte concentration by the corresponding USEPA Region III RBC value at the designated level of risk (ELCR of 1×10^{-6} or HQ of 1).

One volatile organic compound, 4 semivolatile organic compounds, 2 pesticides, and 19 inorganics were detected in groundwater samples collected from monitoring wells at the TFM. 1,4-Dichlorobenzene, heptachlor epoxide, and thallium were the only analytes detected in groundwater samples that exceeded risk-based screening values. 1,4-dichlorobenzene was detected in groundwater sample 87G00301 at a concentration of 4 micrograms per liter ($\mu\text{g}/\text{l}$), which exceeded the USEPA Region III RBC value of $0.44 \mu\text{g}/\text{l}$. Heptachlor epoxide was detected at a concentration of $0.013 \mu\text{g}/\text{l}$ in groundwater sample 87G00301, which exceeded the USEPA Region III RBC of $0.0012 \mu\text{g}/\text{l}$. Although detections of 1,4-dichlorobenzene and heptachlor epoxide exceeded risk-based criteria, they did not exceed State and Federal maximum contaminant level (MCLs).

Thallium was detected in two samples (87G00101 and 87G00201) at concentrations of 3.3 and $3.6 \mu\text{g}/\text{l}$, exceeding the FDEP groundwater guidance concentration of $2 \mu\text{g}/\text{l}$, and the RBC for tap water of $2.9 \mu\text{g}/\text{l}$. The USEPA MCL for thallium in groundwater is $2 \mu\text{g}/\text{l}$. The analytical result for thallium was less than the contract-required detection limit (CRDL) of $10 \mu\text{g}/\text{l}$; therefore, it qualified as an estimated concentration. There is some uncertainty concerning the detections of thallium in groundwater above State and Federal MCLs. Thallium has been observed, below the CRDL, at similar concentrations (2 to $6 \mu\text{g}/\text{l}$) at many sites throughout NAS Cecil Field, including upgradient groundwater samples collected at Operable Units 3 and 6. The detection of thallium may be from its presence as a naturally occurring element or from interelemental interference with iron or other cations during the analysis. Due to the widespread occurrence of thallium at similar concentrations and the potential for interelemental interference, it does not appear that the detection of thallium is site related.

A comparison between concentrations of detected analytes in groundwater and RBCs for tap water and FDEP groundwater guidance concentrations is presented in Appendix B. A cumulative noncancer risk, or hazard index (HI) of 3.5 and an ELCR of 2×10^{-5} , were calculated based upon RBCs for tap water for all detected analytes.

3.2 ECOLOGICAL PRE. Potential exposure pathways and the ecological habitat associated with the TFM Compound were characterized by ABB-ES (presently HLA) ecological risk assessors in June 1996. The TFM Compound is almost entirely paved with asphalt, with the exception of a small area of mowed grass on the western side.

No complete exposure pathways to groundwater were identified within the study area, and no laboratory analytical data for surface soil or subsurface soil was collected. Therefore, no further ecological risk evaluation was conducted.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Groundwater, surface soil, and subsurface soil samples were collected at the TFM, to determine whether or not former activities have resulted in contamination. Contaminated soil and groundwater was encountered in locations associated with known releases of petroleum, and is being assessed separately in accordance with the TMP. Contamination was not detected in soil samples collected in other areas. Concentrations of compounds detected in groundwater samples were compared to human health screening criteria and resulted in an HI of 3.5 and an ELCR of 2×10^{-5} .

Potable water is supplied to the TFM Compound from off site; therefore, a groundwater to receptor pathway does not currently exist. No complete exposure pathways to ecological receptors were identified for groundwater in the study area. Therefore, based upon information obtained for this assessment, the concentrations of analytes detected in groundwater at the TFM Compound do not appear to represent a hazard to human health or the environment. However, further assessment of petroleum-related issues will be undertaken in accordance with the TMP.

Recommendations to reclassify the facilities in the TFM were discussed during a BCT meeting held on December 16, 1997. Based on an evaluation of the data presented, the team concurred with recommendations for reclassification, as tabulated below (Table 1).

**Table 1
Summary of Recommendations for Color Reclassification**

Sampling and Analysis Report
Transportation Fuel Management Compound
Base Realignment and Closure
Zone C, Developed Nonindustrial Area, Group VIII
Naval Air Station Cecil Field, Jacksonville, Florida

Facility	EBS Color	Current Color	Rationale for reclassification
49 178 384	7/Gray	1/White	No contaminants were detected in groundwater samples collected downgradient of these facilities.
584	7/Gray	1/White	Electrical equipment located at this facility has been determined to contain less than 10 ppm of PCBs. Furthermore, no evidence of leakage was observed.
80C 180	7/Gray	2/Blue	Excessively contaminated soil was detected in soil adjacent to oil-water separators associated with these facilities.
80	7/Gray	2/Blue(Yellow)	Excessively contaminated soil and contaminated groundwater were encountered at the UST located on the east side of the building. Further assessment or remediation is required.

Notes: EBS = environmental baseline survey.
ppm = parts per million.
PCB = polychlorinated biphenyl.
UST = underground storage tank.

No groundwater contaminants were detected in samples collected from shallow groundwater monitoring wells installed downgradient of Facilities 49, 178, or 384. A document review and site walkover indicate that PCBs have not been stored or released at Facility 584. Therefore these facilities should be reclassified to 1/White.

Petroleum-contaminated soil has been detected at oil-water separators located to east of Building 80 and west of Building 180. In addition, petroleum-contaminated soil and groundwater were encountered at the underground heating oil storage tank on the east side of Building 80. Assessment of the petroleum contamination is currently underway and the results will be presented in future confirmatory sampling and site assessment reports prepared as part of the TMP.

In accordance with current BRAC Cleanup Plan (BCP) guidance, Building 180 and the two oil-water separators affected by petroleum contaminants in soil should be reclassified to 2/Blue. Building 80C should also be reclassified to 2/Blue because it is connected to one of the oil-water separators associated with excessively contaminated soil. Building 80 should be reclassified to 2/Blue-(Yellow) to reflect the current BCP guidance, and to indicate that further assessment or remedial activity may be required in association with the UST.

REFERENCES

- ABB Environmental Services, Inc. (ABB-ES). 1992. *Contamination Assessment Report, Naval Air Station Cecil Field Transportation Motor Pool Building 80, Jacksonville, Florida*. Prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), North Charleston, South Carolina (October).
- ABB-ES. 1994a. *Base Realignment and Closure Environmental Baseline Survey Report, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (November).
- ABB-ES. 1994b. *Project Operations Plan for Cecil Field and Health and Safety Plan*. Prepared for SOUTHNAVFACENGCOM (December).
- ABB-ES. 1995. Minutes of September 25, 1995, conference call to discuss preliminary risk evaluations.
- ABB-ES. 1997a. *Sampling and Analysis Outline, Building 859LS, Base Realignment and Closure, Zone C, Developed Nonindustrial Area, Group V, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for SOUTHNAVFACENGCOM (January).
- ABB-ES. 1997b. *Base Realignment and Closure Tank Management Plan, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (January).
- ABB-ES. 1997c. *Confirmatory Sampling Report, Building 80, Tank 80, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (November).
- Florida Department of Environmental Protection. 1994. "Groundwater Guidance Concentrations", Bureau of Drinking Water and Groundwater Resources, Tallahassee, Florida (June).
- Naval Air Station Cecil Field. 1995. Oil Filled Electrical Distribution Inventory.
- U.S. Environmental Protection Agency (USEPA). 1994. Memorandum from USEPA Region IV. Subject: Amended Guidance on Preliminary Risk Evaluations (PREs) for the Purpose of Reaching a Finding of Suitability to Lease (FOSL). Atlanta, Georgia (December 20).
- USEPA. 1995. *Region IV Waste Management Division Preliminary Risk Evaluation, Ecological Risk Assessment, Supplemental Guidance to RAGS*. Region IV Bulletin No. 1 (November).
- USEPA. 1996. *Region III Risk-Based Screening Table, Technical Guidance Manual*. Risk Assessment. EPA/903/R-93-001 (May).

APPENDIX A

**PRELIMINARY RISK EVALUATION TABLE
SOIL BORING LOGS**

TITLE: NAS Cecil Field BRAC		LOG of WELL: CEF-80-1S	BORING NO. CEF-80-1S
CLIENT: SOUTHDIIVNAVACENCOM			PROJECT NO: 08520-85
CONTRACTOR: Alliance Environmental, Inc.		DATE STARTED: 10-23-96	COMPLTD: 10-23-96
METHOD: Auger	CASE SIZE: 2 in.	SCREEN INT.: 6 - 16 ft.	PROTECTION LEVEL: D
TOC ELEV.: FEET.	MONITOR INST.: PID	TOT DPTH: 17.0 FEET.	DPTH TO ∇ 7.5 FEET.
LOGGED BY: R. Holloway	WELL DEVELOPMENT DATE: 10-23-96		SITE: 87 - 80 Transportation Bldg

DEPTH F.T.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0					SILTY SAND (SM): 100%, quartz, light to dark gray, fine- to very fine- grained, sub-angular to sub-rounded.		SM	posthole	
0							posthole		
5					CLAYEY SAND (SC): 100%, quartz, yellowish brown, very fine-grained, angular to sub-rounded, moist, iron-oxide staining present.		SC	1,7,7,21	
0					SILTY SAND (SM): 100%, quartz, light to dark gray, fine- to very fine- grained, sub-angular to sub-rounded.		SM	5,7,7,16	
10									
15									
20									
25									
30									

TITLE: NAS Cecil Field BRAC		LOG of WELL: CEF-80-2S	BORING NO. CEF-80-2S
CLIENT: SOUTH DIVNAVFACENCOM			PROJECT NO: 08520-85
CONTRACTOR: Alliance Environmental, Inc.		DATE STARTED: 11-25-96	COMPLTD: 11-25-96
METHOD: Auger	CASE SIZE: 2 in.	SCREEN INT.: 5 - 15 ft.	PROTECTION LEVEL: D
TOC ELEV.: FEET.	MONITOR INST.: PID	TOT DPTH: 16.0 FEET.	DPTH TO ∇ 7.0 FEET.
LOGGED BY: R. Holloway	WELL DEVELOPMENT DATE: 11-25-96		SITE: 87 - 80 Transportation Bldg

DEPTH F.T.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0					SILTY SAND (SM): 100%, quartz, light to dark gray, fine- to very fine- grained, sub-angular to sub-rounded.		SM	posthole	
0							posthole		
5					CLAYEY SAND (SC): 100%, quartz, light brown, very fine-grained, subangular to sub-rounded, moist, iron-oxide staining present.		SC	4,3,7,17	
0					SILTY SAND (SM): 100%, quartz, light to dark gray, fine- to very fine- grained, sub-angular to sub-rounded.		SM	4,4,8,15	
10									
15									
20									
25									
30									

TITLE: NAS Cecil Field BRAC		LOG of WELL: CEF-80-3S	BORING NO. CEF-80-3S
CLIENT: SOUTHDIVNAVFACENGCOM			PROJECT NO: 08520-85
CONTRACTOR: Alliance Environmental, Inc.		DATE STARTED: 10-23-96	COMPLTD: 10-23-96
METHOD: Auger	CASE SIZE: 2 in.	SCREEN INT.: 5 - 15 ft.	PROTECTION LEVEL: D
TOC ELEV.: FEET.	MONITOR INST.: PID	TOT DPTH: 16.0 FEET.	DPTH TO ∇ 7.0 FEET.
LOGGED BY: R. Holloway	WELL DEVELOPMENT DATE: 10-23-96		SITE: 87 - 80 Transportation Bldg

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0					SILTY SAND (SM): 100%, quartz, light to dark gray, fine- to very fine- grained, sub-angular to sub-rounded.		SM	posthole	
0								posthole	
5					CLAYEY SAND (SC). 100%, quartz, light gray, very fine-grained, subangular to sub-rounded, moist, iron-oxide staining present.		SC	6,7,8,8	
0					SILTY SAND (SM): 100%, quartz, light to dark gray, fine- to very fine- grained, sub-angular to sub-rounded.		SM	5,3,8,9	
10									
15									
20									
25									
30									

TITLE: NAS Cecil Field BRAC		LOG of WELL: CEF-80-4S	BORING NO. CEF-80-4S
CLIENT: SOUTHDIVNAVFACENGCOM			PROJECT NO: 08520-85
CONTRACTOR: Alliance Environmental, Inc.		DATE STARTED: 10-23-96	COMPLTD: 10-23-96
METHOD: Auger	CASE SIZE: 2 in.	SCREEN INT.: 5 - 15 ft.	PROTECTION LEVEL: D
TOC ELEV.: FEET.	MONITOR INST.: PID	TOT DPTH: 16.0 FEET.	DPTH TO ∇ 7.0 FEET.
LOGGED BY: R. Holloway	WELL DEVELOPMENT DATE: 10-23-96		SITE: 87 - 80 Transportation Bldg.

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0					SILTY SAND (SM): 100%, quartz, light gray, fine- to very fine-grained sub-angular to sub-rounded.		SM	posthole	
0					CLAYEY SAND (SC): 100%, quartz, light gray, very fine-grained, sub-angular to sub-rounded, moist, iron-oxide staining present.		SC	1,6,7,9	
3.6					SILTY SAND (SM): 100%, quartz, light gray, fine- to very fine-grained sub-angular to sub-rounded.		SM	5,8,9,12	
5									
10									
15									
20									
25									
30									

TITLE: NAS Cecil Field BRAC		LOG of WELL: CEF-80-5S	BORING NO. CEF-80-5S
CLIENT: SOUTHDIVNAVFACENCOM			PROJECT NO: 08520-85
CONTRACTOR: Alliance Environmental, Inc.		DATE STARTED: 11-25-96	COMPLTD: 11-25-96
METHOD: Auger	CASE SIZE: 2 in.	SCREEN INT.: 5 - 15 ft.	PROTECTION LEVEL: D
TOC ELEV.: FEET.	MONITOR INST.: PID	TOT DPTH: 16.0 FEET.	DPTH TO ∇ 7.0 FEET.
LOGGED BY: R. Holloway	WELL DEVELOPMENT DATE: 11-25-96		SITE: 87 - 80 Transportation Bldg.

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0					SILTY SAND (SM): 100%, quartz, light to dark gray, fine- to very fine- grained sub-angular to sub-rounded.		SM	posthole	
0							posthole		
5					CLAYEY SAND (SC): 100%, quartz, light brown, very fine-grained, sub-angular to sub-rounded, moist, iron-oxide staining present.		SC	12,10,20,15	
0					SILTY SAND (SM): 100%, quartz, light to dark gray, fine- to very fine- grained, sub-angular to sub-rounded.		SM	4,3,5,10	
10									
15									
20									
25									
30									

**BRAC Preliminary Risk Evaluation Table for Analytes Detected in Groundwater
Transportation and Fuel Management Compound, Naval Air Station Cecil Field**

Big-80 SAR
PMW/06/98

Analyte	Sample					Screening Values		Calculated Risk Values	
	87G00101	87G00201	87G00301	87G00401	87G00501	FDEPGGC	RBC(T)	ELCR	HI
<u>Volatile Organic Compounds</u>									
Chlorobenzene			5			100	39 n	0.1	
<u>Semivolatile Organic Compounds</u>									
1,2,4-Trichlorobenzene			9			70	190 n	0.0	
1,3-Dichlorobenzene			4			10	540 n	0.0	
1,4-Dichlorobenzene			4			75	0.44 c	9.1 E-6	
bis(2-Ethylhexyl) phthalate			1			6	4.8 c	2.1 E-7	
<u>Pesticide Compounds</u>									
Heptachlor epoxide			0.013			0.2	0.0012 c	1.1 E-5	
alpha-BHC	0.01					0.05	0.011	9.1 E-7	
<u>Inorganic Analytes</u>									
Aluminum	213	9180	36400	53.3	78.4		37000 n	1.0	
Antimony						6	15 n	0.3	
Barium	31.4	20	45.4	9.7	31.3	2000	2600 n	0.0	
Calcium	5280	24100	87500	52200	76500				
Chromium		6.9	26.1			100	180 n	0.1	
Cobalt	1.2	1.2	2.6	1.2	1.1		2200 n	0.0	
Copper		1	5.4				1500 n	0.0	
Iron		1580	4590	124	328		11000 n	0.4	
Lead		4.7	13.9			15			
Magnesium	2110	6140	5250	2290	9240				
Manganese	51.5	13.1	28.3	24.6	23.7		840 n	0.1	
Nickel			10.8			100	730 n	0.0	
Potassium	563	7290	2460	513	1660				
Selenium			6.4			50	180 n	0.0	
Sodium	11500	11300	18300	1810	6670	160000			
Thallium	3.3					2 *	2.9 n	1.2	
Vanadium	2.1	9.2	30	3		49	260 n	0.1	
Zinc	8.4	9	18.6	5.2	6.3		11000 n	0.0	
Cyanide	2	2.7				200	730 n		

2.1 E-5 3.5

Notes:

All Analytes are reported in ug/l
Sample Suffixes indicate the following:
F=filtered sample, DL= laboratory diluted sample, RE= laboratory re-extracted, D=field duplicate
FDEPGGC = FDEP Groundwater Guidance Concentration, June 1994
*= values that exceed FDEPGGC
p= primary standard (MCL)
st= systemic toxicant
t= organoleptic standard
s= secondary standard (related to taste, odor, color, or other non-aesthetic effects)
RBC(T)= Risk-based Concentration (Tap Water), USEPA Region III, May 1996
c=carcinogenic risk
n=non-carcinogenic risk
ELCR = calculated excess lifetime cancer risk, (ELCR = detected concentration/RBC(T) * 10E-06)
HI = calculated Hazard Index for non-carcinogenic analytes (HI=detected concentration/RBC(T))